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REPORT

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of the 7,000-ton coal-ore freighter under construction at VEB Warnowwerft Warnemuende. [redacted] technical description 50X1-HUM [redacted]

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INFORMATION REPORT INFORMATION REPORT

4 DEC 1957

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SECRETEAST GERMANY

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NAVAL/ECONOMIC

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Construction details of the 7000 ton coal-ore freighter as being
built at the WARNOUWERFT WARNEUENDE.

(Current)

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The following [] details []
for the construction of the 7000 ton coal-ore freighter as being built
at present in the WARNOUWERFT, WARNEUENDE: 50X1-HUM

1. (a) Main measurements:

Overall length	...	133.70 m	[]
Length between perpendiculars	...	126.00 "	
Width of frame	...	17.00 "	
Height to main deck	...	9.50 "	
Draught loaded	...	7.40 "	

(b) Displacement ... 11,080 tons

(c) Dead-weight carrying capacity ... 7,172 " dw

(d) Loading capacity ... 6,439 "

(e) Distribution of the dead-weight carrying capacity:

(i) Load	...	6,439 "	dw
(ii) Fuel	...	508 "	"
(iii) Furnace oil	...	61 "	"
(iv) Lubricating oil	...	15 "	"
(v) Fresh water	...	35 "	"
(vi) Boiler water and cooling water	...	93 "	"
(vii) Provisions and equipment	...	14 "	"
(viii) Crew and belongings	...	7 "	"
		<u>7,172 "</u>	"

2. Type of ship and method of construction:

(a) The coal-ore freighter is a single-decked ship with a continuous main deck, one poop with a bridge-deck over it, a boat dock, bridge with wheelhouse and compass platform, and a forecastle.

(b) The ship has five cargo holds and is strengthened for navigation in ice. It is a single-screw vessel with level keel, cruiser stern, raking stem and engine room in the stern.

(c) The body of the ship is divided by 7 watertight bulkheads into the following compartments:

(i)	Forward peak
(ii)	Hold No 1
(iii)	Hold No 2
(iv)	Hold No 3
(v)	Hold No 4
(vi)	Hold No 5
(vii)	Engine room
(viii)	After peak.

(d) The ship is to be constructed on the transverse framing system except for the main deck in the area of the holds where continuous fore-to-aft beams will be inserted to strengthen the deck.

(e) The ship's hull will be electrically welded up to the deck-stringer angle and the uppermost bilge seam.

(f) The building of the ship's hull is to be done in plain and cubic sections.

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2-

3. Ship's use:

The coal-ore freighter is to be used to transport 6306 tons of coal or ore. The stowage factor for coal is to be 1.31 cu m/ton and for ore 0.60 cu m/ton.

4. Area of operation

The ship is built to operate in the Arctic Ocean and the coastal waters of the Soviet Union.

5. Operational radius:

The planned stowage space for fuel oil, furnace oil, lubricating oil, fresh water and supplies is adequate for a steaming range of 18 days with a fully-loaded ship. To this must be added a safety reserve of 20%. A journey of 6000 sea miles is thus guaranteed.

6. Classification:

The ship will be given a classification by the Soviet Sea Register authorities.

7. Speed:

(a) Normal duty speed 13.75 knots
(b) Speed at trials 14.50 "

8. Tonnage measurement:

As at 1 Jul 57, no survey had been made of the ship.

9. Passengers: Nil.10. Crew: 35 crew and 4 reserves.11. Plans and drawings:

(a)	General plan, inboard profile plan and upper decks	1.401.0000.001
(b)	General plan, main deck and storage	0000.002
(c)	Midship section (rivet construction 1st-4th ship)	0000.003A
(d)	Midship section (welding construction after 5th ship)	0000.003
(e)	Engine specifications	6000.420

12. Holds

There are 5 holds for the loading of coal and ore. Capacity of the holds is as follows (with hatches closed):

(a)	Hold No 1	-	1260 cu m
(b)	Hold No 2	-	1919 "
(c)	Hold No 3	-	2049 "
(d)	Hold No 4	-	1994 "
(e)	Hold No 5	-	2091 "
	TOTAL		<u>9313</u> cu m

13. Size of Hatches:

(a)	Hatch No 1	-	10.5 x 6.0 m
(b)	Hatches Nos 2-5	-	11.9 x 10.5 m.

The hatch covering consists of steel covers with a special opening and closing device on the MACGREGOR system.

14. Cargo-handling gear:

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- 3 TONS**
- (a) 5 cranes on board with lifting capacity of
and length of jib 14 - 4.5 m.
- (b) 1 Provisions derrick.

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15. Main Engine Installation:

- (a) The main engine consists of a 7-cylinder, single-acting two stroke, airless-injection diesel engine of the MAN type K 7 Z 70/120 C, pressure charged with a performance of 4700 effective horsepower (Pferdestärke) at 110 revolutions per minute. It is of the crosshead build with exhaust gas turbo-blower and is a directly reversible engine.
- (b) Technical details of the main engine are given below:
- (i) Power 4700 HP
 - (ii) Revolutions 110 revs/min
 - (iii) Maximum power 5400 HP
 - (iv) Revolutions 115 revs/min
 - (v) Number of cylinders 7
 - (vi) Diameter of cylinders 700 mm
 - (vii) Piston stroke 1200 mm
 - (viii) Mean official pressure 5.9 kg/sq cm
 - (ix) Mean indicated pressure 7.35 kg/sq cm
 - (x) Starting pressure 30-10 kg/sq cm
 - (xi) Flywheel diameter 2080 mm
 - (xii) Right handed drive DIN HNA 101
 - (xiii) Fuel oil consumption 155 grain/HP hr (+ or - 5%)
 - (xiv) Lubricating oil consumption ... 0.8 grain/HP hr.

16. Shafting and Propeller:

- (a) The following parts comprise the shafting gear:
- (i) 1 intermediate shaft measuring 7 m in length and 455 mm dia.
 - (ii) 1 propeller shaft measuring 7.1 m in length and 474 mm dia.
 - (iii) 1 clamp coupling.
 - (iv) 1 propeller with 4 blades, right-handed, dia 5.18 m H/D(sic) 0.83.
 - (v) 1 shaft tube with pock-wood pillowing.
 - (vi) 2 line shaft bearings, housing, cast iron, bearing brasses, bearing linings, cast steel.
- (b) The ship's propeller is made of special brass which has been cast in one piece. As a reserve, a propeller made of cast steel with blades attached is supplied.

17. Auxiliary engines:(a) For electricity production:

For this purpose there are 3 x 6-cylinder, 4-stroke diesel engines of the type 6 DV 136 made by the firm BUCKAU-WOLF. This type of engine has a nominal performance of 300 brake hp at 500 revs/min, has an upright engine and is not reversible. Details are as follows:

- (i) Cylinder diameter 240 mm
- (ii) Piston stroke 360 mm

Two of the engines are left-handed drives and the other is right-handed. All the engines are solidly coupled with the three-phase current generators.

(b) For steam production:

- (i) 1 Auxiliary boiler for the administrative needs of the ship (as well as the heating system) is installed. This is an oil-fired water-tube boiler. Firing of the boiler is effected by a rotary oil burner of the type RB 300 with a fuel-oil throughput of 300 kg/H.

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50X1-HUM

SECRET

-4-

50X1-HUM

Steam capacity 2.5 t/h
 Heating area 44 sq m
 Pressure 4 kg/sq cm
 Steam temperature 151° C
 Warm water temperature 60° C.

- (ii) 1 waste heat boiler is installed on the "LA MONT" system with forced water transference to make use of the waste heat from the main engine. This boiler is installed in the machinery casing at boat-dock height. It can be operated in parallel with the auxiliary boiler and at the same time can act as the sound absorber for the main engine.

Steam capacity 1.46 t/h
 Pressure 4 kg/sq cm
 Heating area 120 sq m
 Steam temperature 151° C
 Warm water temperature 60° C.

(o) Pumps

1	Circulating pump (seawater) electrically operated	Q = 240 M ³ /H
1	" " (fresh water) " "	Q = 220 "
1	Reserve " " " "	Q = 220 "
2	Fresh water pumps	Q = 5 "
2	Lubricating oil pumps	Q = 50 "
1	Fuel transfer pump	Q = 40 "
2	" injector pumps	Q = 1.25 "
1	Direct bilge pump	Q = 16 "
1	Main bilge and ballast pump	Q = 240 "
1	" " " "	Q = 100 "
1	Exhaust pump	Q = 24 "
2	Fire-fighting and deck-washing pumps	Q = 90 "
1	Seawater pump	Q = 2-14 "
1	Washing water pump	Q = 4-7.5 "
1	Drinking " "	Q = 1.4 "
1	Warm water circulating pump	Q = 1.9 "
1	Harbour circulating pump	Q = 33 "
1	Reserve lubricating oil pump	Q = 5 & 6.3 "
1	Furnace oil daily pump	Q = 3.05 "
2	Feed pumps	Q = 6 "
2	Hot water circulating pumps	Q = 6 "
2	Furnace oil pressure pumps	Q = 0.7 "
1	" " hand operated pump	Q = 1.6 "
1	Fuel " " " "	Q = 4 "
1	Dirty oil " " "	Q = 4 "
1	Drinking water hand pump	Q = 1.6 "
1	Washing water " "	Q = 1.6 "
1	Drainage " "	Q = 4 "
2	Lubricating oil " "	Q = 4 & 1.6 "

18. Refrigeration for Provisions:

- (a) The refrigeration plant consists of 4 rooms and is arranged to produce temperatures as follows: 50X1-HUM

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50X1-HUM

-5-

For meat and fish - - 6°C

For vegetables, potatoes
and wet provisions + 4°C.

- (b) The fully automatic thermo-electric operated refrigeration plant consists of 2 compressor sets each with a freezing capacity of 3580 kilo-calorie/H at -17.5°C vaporisation temperature and +35°C liquification temperature.
- (c) Refrigeration takes place by the vaporisation of a safety refrigeration mixture named FRIGEDOHN 12 (F₁₂) and as a cold conductor the air is used which has been cooled off during circulation in wall evaporators.

19. Air conditioning plants:

- (a) The ventilation and heating of the living quarters is carried out by an automatic thermostatically controlled air conditioning plant and a warm water pump heater. This arrangement makes possible a combination of both installations whereby the air conditioning plant and the central heating systems can be operated either at the same time or singly.
- (b) The air conditioning plant operates on 50% fresh air and 50% old air and has a capacity of 12000 M³/H.
- (c) During the summer when outside conditions show a temperature of + 30°C and 50% humidity, the internal air conditioning is set at a temperature of +24°C with 59% humidity.
- (d) During the winter, with outside conditions at -20°C with 70% humidity, internal conditions are regulated at +18°C and 60% humidity.

20. Fire-fighting appliances:

- (a) Water: 2 electric rotary pumps with a capacity of 90 M³/H.
- (b) CO₂: 40 bottles each of 30 kgs with an operating pressure of 60 atmospheres absolute.
- (c) Steam: The steam needed for the steam operated fire-fighting equipment is taken from the auxiliary boiler.

21. Life-saving equipment:

- (a) 2 lifeboats made of light metal each measuring 8.5 m in length and each with a capacity of 50 persons. They are hand-propeller driven. They are on gravity davits with electric winding gear.
- (b) 1 wooden work boat, 5 m in length situated under the provisions loading jib on the poop deck.

22. Steering gear:

The steering gear consists of a linear 4-cylinder trunk-piston engine of the ATLAS BREMEN type, with telemotor steering and a nominal momentum of 16 MT (sic). The swing of the rudder is 35° to either side and the turning time is 30 secs.

23. Anchor equipment:

- (a) 2 sheet anchors each weighing 4200 kg
1 Reserve sheet anchor " 4200 kg
1 Stream anchor " 1250 kg
1 Warp " " 500 kg.

- (b) On the fore-castle head there is installed an electric windlass for 300 m of 54 mm cast steel chain with a wattage of 32 kw.

50X1-HUM

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24. Hauling gear:

On the poop deck there is a capstan with a hauling power of 5 tons at a speed of 15 m/Min. In addition, there is an ample supply of bollards, hawsers, cables, etc.

25. Living quarters:

- (a) The living quarters for the crew, consisting of 39 men and reserves, is in the after-quarter of the ship.
- (b) The Captain and the Chief Engineer will each have a living cabin and a sleeping cabin as well as a bath and a toilet. Other members of the crew will be accommodated in one- and two-berth cabins.
- (c) There will be the following recreation rooms:
 - 1 VIP wardroom to seat 10;
 - 1 men's wardroom to seat 22;
 - 2 officers' wardrooms each to seat 20;
 - 1 Hospital with two beds.

26. Decoration of living quarters:

- (a) The walls of the officers' cabins and wardrooms are made of plywood covered with linerusta linoleum or veneered panelling.
- (b) The walls of the crew's cabins are made of sheets of hydronalium metal with fibro-board covering stuck down with linerusta linoleum.
- (c) Flooring is of litosilo with a rubber covering. Carpets and runners are provided.
- (d) Other furnishings are made of veneered ply-wood boards.

27. Decoration of the administrative rooms and ablutions:

The walls of these rooms are covered with varnished metal sheeting. The floors are tiled.

28. Electrical installations:

- (a) To make the ship self-supporting for electrical energy, 3 diesel three-phase current motors, each of 285 kva, are installed on the platform in the engine room. Two of these motors are sufficient for the electrical installations on the ship and the third is held as a reserve.
- (b) Technical details of the constant voltage generators are as under:

Type:	SEED 1305
Light capacity:	285 kva
Electric tension pressure	3-400 v.
Strength of current	42 amps
Power factor	0.7
Construction	B 2
Type of protection	P 22

 (sic)
- (c) On the ship there are four separate electric wiring systems as follows:
 - (i) 380 volts - for energy using equipment;
 - (ii) 220 " - for lighting, administrative machine and kitchen equipment.
 - (iii) 24 " - for emergency lighting;
 - (iv) 12 " - for low voltage plugs.
- (d) The type of current for the 380 volt and 220 volt systems is 3 phase alternating current with a frequency of 50 Hz. The 24 volt system is battery-fed with direct current and the 12 volt system with 1 phase alternating current.
- (e) The mains network is laid out for all poles.

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-7-

29. W/T and signalling equipment:

The following equipment is on board:

- 1 Navigational transmitter - 250 watt medium wave;
- 1 Service transmitter - 250 watt short wave;
- 1 Emergency transmitter - 60 watt short wave;
- 1 Main receiver - medium and short wave;
- 1 Service and all-wave receiver;
- 1 Emergency tube receiver;
- 1 Automatic SOS signaller;
- 1 " " receiver;
- 1 Emergency boat transmitting and receiving set;
- 1 Broadcast relay system;
- 1 Echo-sounder;
- 1 Speedometer;
- 1 Electric towing log;
- 1 Gyro compass;
- 1 Radar set;
- 1 Automatic telephone system;
- 2 Service telephone systems;
- 1 Fire alarm system;
- 1 Stewards' bell system;
- 1 Rudder-angle indicator;
- 1 Engine room telegraph system;
- 1 Tyfan whistle;
- 1 Marine shaft revolution indicator.

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